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ABSTRACT

This paper uses case studies to show that by (1) empowering civil society to monitor the environment through environmental education for primary and secondary students, (2) providing environmental awareness programs for the public, and (3) supporting efforts to improve the functional literacy of targeted groups, the effectiveness and sustainability of environmental projects can be improved. The five case studies were conducted in Colombia, Indonesia, Mexico, the Philippines, and Trinidad and Tobago. The report concludes with lessons learned from the case studies concerning development projects. (CCM)

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Empowering Civil Society to Monitor the Environment

Education for Students, Awareness for the Public, and Functional Literacy for Targeted Groups

David Lakshmanan Ariasingam

WORLD BANK INSTITUTE

WB Working Paper

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Education for Students, Awareness for the Public, and Functional Literacy for Targeted Groups

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Washington, D.C.

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Foreword

Although progress has been made in safeguarding the environment during the final years of the twentieth century, an enormous challenge remains: providing an equitable standard of living for all without causing irreparable damage to life support systems. Diseases resulting from environmental degradation kill one in five children before the age of five in the poorest areas of the world. Preventable diseases are concentrated among society's poorest. In rapidly industrializing countries, the poor face the old threats from a lack of adequate sanitation, housing, and food as well as new threats from toxic chemicals and fumes from industries and transport.

This paper, with the help of case studies, provides evidence that empowering civil society to monitor the environment through environmental education for primary and secondary students, environmental awareness programs for the public, and efforts to improve the functional literacy of targeted groups improve the effectiveness and sustainability of environmental projects.

Finally, a special word of thanks goes to the World Conservation Union (IUCN) for its advice and encouragement.

Vinod Thomas

Director

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Introduction

Progress has been made around the globe at the end of the twentieth century in safeguarding the environment. There have been notable improvements in the areas of ozone depletion, climate change, biodiversity, desertification, land degradation, and water quality and supply. The World Bank, together with external partners such as the World Conservation Union (IUCN) and the Worldwide Fund for Nature and client countries, has made significant investments in promoting a better environment by developing national plans and creating institutions to deal with environmental issues.

In Latin America improving the quality of the human environment and rational management of natural resources are moving to the top of the development agenda. At the end of fiscal 1997, there were 40 projects in the region's portfolio, as well as 12 Global Environmental Facility projects. Lending was projected for more than $5.5 billion between fiscal 1997 and fiscal 1999, over half of the total World Bank investment for the Latin America and Caribbean Region for the same period. In Africa there also has been an increase in the number of projects supporting environmental planning efforts, local environmental action, environmental assessments, and strategic steps to mainstream the environment. In southeast Asia's fast-growing cities, clean air and water, sanitation, and emissions control are the priorities.

Despite the progress made, formidable challenges remain. In Latin America, a full one-third of the population is regarded as poor, both in terms of income and in terms of access to basic necessities and services. This group of poor is the fastest growing in Latin America (Londono 1995). Evidence suggests that the main causes of poverty in Latin America are discrimination and a lack of education. Improvements in education will increase the income opportunities for poor indigenous peoples and benefit the environment. In the East-Asia and Pacific region, the challenge is to convince politicians and citizens alike of the need to balance economic growth and environmental sustainability. A major challenge in the Africa region is to encourage self-governing institutions to manage common-pool resources (for

example, local fisheries, irrigation); to strengthen institutions at all levels of government, and to unbundle policy, planning, financing, and training. If these bureaucracies are more autonomous, they will be better able to serve the population and the needs of sustainable development.

Overview of the Paper

This paper provides a brief introduction to environmental education for schools, environmental awareness for civil society, and functional literacy for targeted groups—a specific educational methodology that is useful in sustaining environmental development projects. Citizens need environmental information and knowledge before they can be expected to voice their opinions, make informed consumer choices, and develop tastes and values that are environmentally friendly. Development programs and projects will find success and sustainability when civil society supports efforts to safeguard the environment. Consider this very simple example. An urban environment or sanitation project that targets garbage and human waste disposal cannot eliminate the problem in a sustainable way if people do not get involved in the project. Without their participation, there is a good possibility that the problem of unsanitary waste disposal will return as soon as the project ends.

Training and institution building are needed to increase local expertise and ensure sustainability. For example, environmental issues will not be taught in the classroom unless there is effective in-service teacher training. In the same way one cannot promote public awareness unless journalists are informed about the environment. Training of trainers is needed when it comes to agricultural extension workers. Strong institutions promote sustainable investments. Environmentally literate decisionmakers in strong institutions are needed to manage the national environment prudently as well as mitigate practices that damage the environment.

In short, to protect environmental investments, environmental information and knowledge must be made available to the people through education, awareness, and functional literacy programs. Recent empirical studies in developing

countries have shown that an environmentally literate population has a major impact on reducing pollution.

- A study of informal regulation of industrial pollution in Indonesia showed that in less-educated communities the cost of pollution is lower and the intensity of pollution much higher (Pargal and Wheeler 1995).
- In China, environmental regulators respond to more than 100,000 complaints a year. Basic education has a strong independent effect on the propensity to complain. Dasgupta and Wheeler (1997) argue that regulators rely on complaints to guide their inspections. "Silent" regions (largely the result of a lack of education) receive a lower allocation of resources. To reduce the unfortunate impact of such a system, targeted outreach programs are urgently needed to encourage poorly educated people to voice their complaints.

Environmental Education for Students

"The generation now being educated will have to do what we, the present generation, have been unable or unwilling to do: stabilize a world population... stabilize and then reduce the emission of greenhouse gases,... protect biological diversity,... reverse the destruction of forests... and conserve soils. Those who follow us must learn how to use energy and materials with great efficiency. They must learn how to utilize solar energy in all its forms. They must rebuild the economy in order to eliminate waste and pollution. They must learn how to manage renewable resources for the long term. They must begin the great work of repairing, as much as possible, the damage done to the earth in the past two hundred years of industrialization. And they must do all of this while addressing worsening social and racial inequalities. No generation has ever faced a more daunting agenda" (Orr 1993).

Realizing the truth of these words, member countries in the Organisation for Economic Co-operation and Development have already begun to identify guiding principles for environmental education (OECD 1995). OECD stresses the connection between students' knowledge and practice. For a long time environmental education was the purview of ecologists and environmentalists, and it was treated as a highly specialized subject. As public awareness of environmental degradation increased, educators began to discuss environmental issues in the classroom. At the outset, these interventions by teachers were aimed at general environmental awareness. Today an ever growing number of educators consider environmental education an essential part of a good education.

Timely changes in the way science is taught have helped environmental educators. Science teaching is moving from lecture-oriented sessions where students are passive learners to hands-on science classes where students are active participants. Science teaching is also moving from deductivist science (for example, dissections of dead animals) to observationist studies (observations of living animals). Proponents of environmental education need to present students with real-life environmental problems and encourage them to propose solutions and take future actions.

The Debate over Environmental Education

Proponents of environmental education argue that students at the primary and secondary levels need facts, examples, and case studies to make them aware of environmental issues and the detrimental impacts on the environment of certain practices. They believe students should be encouraged to develop a bond to the natural world. This requires that a direct experience of nature be made an integral part of the curricula. A recent statement by students who produce *Earth Focus*, a magazine distributed worldwide, is very telling. At the November 5, 1998, meeting of the IUCN (World Conservation Union), they identified the problem as the "inability to touch the younger generation emotionally regarding the welfare of planet earth" (IUCN 1998).

There are two approaches to environmental education in the classroom. The first has been recommended:

- the "infusion" method, which is interdisciplinary in approach and has no specific course or subject on environmental education, and
- the "block" method, which uses a distinct environmental course, treated as a separate subject with blocked class time.

Critics of environmental education argue that at the primary and secondary levels curricula are already overloaded. While proponents agree that separate subjects may not always be appropriate at these levels, they argue that integration of environmental issues in the classroom is needed because there appears to be a global consensus that paving the way to a sustainable future is of primary importance. They feel that this integration is possible and need not overload the curriculum. Indeed, the trend has already started. In Gambia and Namibia, for example, environmental curricula are well established, and both methods are being developed at the primary and secondary levels (GreenCOM 1996b).

To succeed, both approaches require a body of sound information on ecology and the environment in the local language. One example is the "*Ecology of Indonesia*" series begun by the World Bank in 1982. These books can then be used to produce simpler books on national and local environmental issues for school chil-

dren and their teachers. Teacher training in environmental education should go hand in hand with the production of such books. This is critical because new scientific information takes approximately 13 years to enter the formal education curricula (GreenCOM 1996a). Therefore, teachers need to develop innovative ways to discuss current environmental problems in the classroom. Teachers who specialize in environmental education are not recommended because they could be marginalized in the school faculty and considered to be political or partisan in their approach (Plater 1996). Instead, teachers of many different subjects can learn to include environmental topics in their teaching materials.

Teaching and Learning about Environmental Issues

Scientific principles and theories can be taught well through the use of modest equipment in simple surroundings (World Bank 1993). Indeed, effective schooling in environmental issues can be achieved in a wide variety of settings from cities to rain forests. The most appropriate approach to teaching focuses on the students' own environment. This is especially true at the primary level (Baez, Knamiller, and Smith 1987; Ware 1992).

Environmental teaching should focus on three areas: (1) fundamental scientific knowledge of environmental basics; (2) application of such knowledge to public policy issues; and (3) specific environmental knowledge to provide solutions to environmental problems (World Bank 1993). In addition to a theoretical background, students need the practical experience that can be gained through laboratory experiments, field visits, data gathering and analysis, evaluation of information, communication methods, problem solving, and decisionmaking.

To improve environmental education, two steps are essential: the design of a typical Environmental Education Curriculum and the training of teachers (World Bank 1993).

The testing and final implementation of a new environmental curriculum takes a long time and requires sound preparation and working schedules. Stages include:

- establishment of a core curriculum development team;
- establishment of a network of consultants;
- development of curriculum scope and sequence;
- preparation of environmental education materials;
- planning and realization of field testing;
- evaluation of new materials; and
- scaling up to full implementation.

Almost any attempt at developing a sound environmental education program in schools will fail miserably if teachers are not adequately trained to teach the newly developed curricula. Nepal has done a good job in this regard (see box 1). Teacher training centers should consider teaching the following elements:

- basic environmental knowledge for teachers who have not had previous exposure;
- contemporary teaching methods; and
- multidisciplinary approaches for schools that are in a position to treat environmental education in a more holistic manner.

Pre-service teacher training can use these three methods to incorporate environmental issues into specialized subjects such as biology and geology. In-service teacher training can also include the above methods coupled with short seminars and workshops, audio-visual aids, and field trips (World Bank 1993).

Box 1. Environmental Education in Nepal

In Nepal a national conservation strategy was adopted in 1988. The environmental education program has contributed to the preparation of classroom materials that incorporate environmental issues in the classroom. The program has also been instrumental in promoting conferences on national policy, teacher training activities, and preparation of curricula and textbooks.

Environmental issues have been incorporated at the primary level in four subjects: Nepali, Social Studies, Health Education, and Science. Teachers' syllabi and workbooks, supplementary readers, games, and posters on fauna and flora of Nepal were prepared. At the secondary level, new subjects integrate science, population studies, and the environment.

Source: IUCN (1995).

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Environmental Awareness for Civil Society

One of the significant benefits of awareness programs is that they involve segments of the population who have not been served by formal schooling. The communication gap between experts and the lay public can only be bridged by a concerted communication effort. Some environmental programs target particular groups, such as women. In Egypt, for example, the Ministry of Public Works and Water Resources engaged women in the program to clean up and maintain the canals. The women's observations that trash was thrown into the canals because of inadequate garbage disposal led the municipality to design new canals with adequate garbage disposal sites.

As table 1 shows, countries have effectively used the media, entertainment, workshops, and other means to improve the environmental awareness of their citizens. These methods often target specific groups such as journalists, TV and radio personnel, or (in the case of Bahia, Brazil) civic leaders and community leaders. The Brazilian media are well developed, with about 317 registered newspapers and numerous magazines. Brazil's National Environment Action Plan, supported by the Bank, is extensive and comprehensive, yet it remained largely unknown outside the circle of concerned professionals. Therefore, in the state of Bahia an initiative called "Program of Environmental Education through the Press" was begun. It has the following three components: (1) a community component to provide information to the public at large; (2) a pedagogical component to give teachers information; and (3) an evaluation component to measure the program's effectiveness.

In El Salvador a national newspaper, *El Gunaquin*, uses graphics and articles to communicate environmental issues to children. Sixty-two percent of the teachers surveyed by a nongovernmental organization reported that they used this newspaper supplement in their classrooms. Public awareness programs in developing countries, which are often sponsored by NGOs, are varied in scope but may be limited to certain areas of the country (table 1). Concerted national efforts are more the rule in some OECD member countries such as Australia, Canada, Germany, Netherlands, Scotland, and Spain.

Table 1. Programs in Developing Countries to Promote Public Awareness of Environmental Issues

Country	*Environmental objective*	*Implementation method*
Brazil (Sao Paulo State)	Protection of forests and Black Lion Tamarin	Exhibitions, workshops, and radio
Ecuador (Quito)	Waste collection and recycling	Baseline collection of community attitudes, followed by awareness programs
India (Bangalore)	Awareness of issues related to sanitation, garbage, congestion, air, noise and industrial pollution	House-to-house campaigns using film, slide shows, posters, pamphlets, TV and radio programs. Attendance by civic leaders during meetings
Indonesia	Political support for marine conservation	Lobbying ministers; issuing radio, TV, and press bulletins
Nepal	Capacity building	Training of extension workers and government and private employees about environmentally friendly behavior
Western Africa and the Sahel	Awareness of issues related to deforestation, over-exploitation of soil, over-grazing, free felling, lack of water and poaching	Offering workshops, publishing magazines, and initiating community discussions using multiple methods to convey messages
Zimbabwe (numerous districts)	Connecting protection of natural resources, especially wildlife, with rural economic growth	Communal Areas Management Programme (CAMPFIRE)—awareness and eco-tourism

Sources: IUCN (1995) and GreenCOM (1996b).

Functional Literacy Programs for Targeted Groups

Functional literacy programs give people and their communities "voice" and "choice." Perhaps functional literacy can best be described as problem-solving education (Freire 1993). In a public institution *voice* has impact, and in a market both *voice* and *choice* by consumers are influential. The term "functional illiterate" is often used to describe a person who cannot read or write or who reads or writes below a minimum level required to function in even a limited social situation.

Functional literacy programs are not bound by the formal restraints of formal education. They rely on newspapers, magazines, and other visual, tactile, and audio media, instead of lectures, to communicate information. The material and discussions are introduced in the context of problems in society. For example, a program on pollution control would inform communities about the negative effects of pollution on health (sanitation, air quality, water quality) and on the economy of the area (loss of productivity). The educators' function is to be a catalyst who brings specialized knowledge to enhance the empirical knowledge of those enrolled in the program.

A comparision in table 2 of the beneficiary approach and the functional literacy approach to enhancing project effectiveness and sustainability is revealing. Both approaches contribute to the sustainability of a project.

The following five-step process is one of several possible approaches to functional environmental literacy:

1. Identify environmental problems.
2. Show people that they have the power to act against environmental damage.
3. Show stakeholders where they can obtain data.
4. Educate stakeholders to interpret the data.
5. Enable citizens to formulate an action plan or complaint.

As noted earlier, if strong institutions are not in place and if training is not done, investments will not be sustainable (box 2).

Table 2. Differences between the Participation and Functional Literacy Approaches

Participation approach	*Functional literacy approach*
It is often understood as citizen participation in public decisionmaking (Pritchett 1996).	It is a concrete and specific educational methodology.
It is reactive: a project is proposed and potentially affected people react to it.	It is empowering. It enables people to "voice" their preferences, share knowledge, engage in society, and exercise consumer sovereignty through "choice."
It is not specifically an educational methodology. It does not transfer knowledge.	It absorbs outside technical knowledge and incorporates institutional arrangements, while sharing empirical local knowledge.
A referendum or consensus is sought as a decisionmaking tool.	Outcomes can be tilted toward a collective decision or a decision based on technical merit. For example, the location of headworks in a communal irrigation system should have more to do with topography and hydrology than with citizen participation (Austin, Warwick, and Murphy 1984).

Box 2. Sustainable Development: The Need for Strong Institutions and Effective Training

Institutions

Historically, theoreticians, policymakers, and practitioners have argued for private ownership or a powerful centralized institution to manage the environment. In recent years, however, studies have pointed to a new model that successfully combines public and private institutions. In countries where governmental institutions are weak, ill equipped, and underfunded, the use of self-governing institutions to manage common-pool resources (for example, local fisheries, irrigation) is a promising avenue.

To strengthen institutions at all levels of government, it may be advisable to unbundle policy, planning, training, and funding. In other words, public monopoly may need to be questioned. A variety of institutional options can be employed in developing delivery and regulating institutions that are tailored to country-specific needs.

Training

Training media specialists can be a sound investment because they are cost effective and can disseminate information broadly. In India, the Supreme Court has directed the national television network to cover environment-related programs for at least seven minutes a day. Radio Nepal regularly broadcasts weekly programs on the environment. The Economic Development Institute of the World Bank has conducted media training throughout Southern Africa, Central America, and South Asia.

Training for practitioners in the private sector and in-house environmental units should also be encouraged. In Quito, Ecuador Corporaciòn OIKOS targets private companies to change production and manufacturing techniques. The program uses scientific, technological, and business expertise to show Ecuadorian companies that incorporating environmental considerations in their operations increases productivity and profits and at the same time prevents or reduces environmental degradation and waste.

Training provided through extension services, NGO field officers, community development organizations, and church organizations can strengthen institutions. Training of trainers is important as well. Agricultural extension workers can be effective in reaching people in rural areas. Rural families depend on extension workers for information and advice on rural development and agriculture. However, extension workers need pre-service or in-service training so they can adequately address environmental issues in their outreach programs.

Environmental training involves government ministries, districts, municipalities, local institutions, and universities with programs abroad (preferably South-to-South). On-the-job training through short intensive courses can be very useful.

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Case Studies

Five environmental projects supported by the World Bank are discussed in this section (table 3). These five cases show how civil society, when empowered, can monitor the environment and enhance the effectiveness and sustainability of projects. The cases all address brown issues, because no appropriate green case studies could be found within the World Bank's portfolio.

Table 3. Five Case Studies with Civil Society Components (in US$)

Country and year	*Program*	*Total cost Million $*	*Total credit Million $*	*Cost of component $*
Colombia 1995	Urban Environment Management Project *Monitoring Councils of Overseers*	40	20	1.70 million
Indonesia 1995	Program for Pollution Control, Evaluation, and Rating *Getting Industries to Publish Emissions*	na	na	250,000/ medium (i.e. water, air, toxics)
Mexico 1995	Northern Border Environment Program *National Environmental Systems for Complaints*	190	95	2.0 million
Philippines 1991[a]	Metropolitan Environmental Improvement Program *Community-Based Initiatives*	na	0	170, 380 thousand
Trinidad and Tobago 1995	Environmental Management Project *Enforcement of Regulations through Civil Society Complaints*	10.50	6.25	1.06 million

a. The cost figures are for the 1996–97 period.

Colombia: Managing the Urban Environment

The principal environmental issue in Santiago de Cali, Colombia, is water pollution. Other environmental issues include air pollution, loss of biodiversity, deforestation, uncontrolled growth of the city, and improper disposal of hazardous wastes. Most of the industries are located between Cali and the municipality of Yumbo. The pulp, paper, and chemical production industries have a tendency to be high polluters.

Objective

The Environmental Management Authority (EMA) of Cali, *Departmento de Gestión del Medio Ambiente* (DAGMA), was established in 1994. However, at the time of this project in 1995 the institution was restricted by a lack of expertise in such areas as law, regulation, and economic instruments. There was also a shortage of equipment to monitor pollutants and lack of coordination between regional and municipality offices. These limiting factors, coupled with budgetary constraints, made the use of citizens as environmental overseers not simply a good idea but a necessity. The objective of the environmental overseer initiative in Cali is to empower citizens to monitor the environment and exercise some control over it.

Implementation

Monitoring Councils, or *Vedurias*, at the national and regional levels were established by the Colombian National Constitution to serve as a medium through which citizens could exercise their right to intervene and contribute to environmental progress. In general, the Monitoring Councils have four functions:

- to monitor and evaluate environmental plans of various government entities;
- to monitor environmental projects and services as they are proposed by the administration;
- to monitor resource expenditures for projects and services under implementation in conjunction with the beneficiary communities; and
- to identify and denounce any violation of community rights granted by the Colombian National Constitution.

Any citizen who enjoys a full command of his or her faculties is able to apply for membership on the Monitoring Councils and become a veedor or overseer. DAGMA sets the following criteria for admission:

- previous experience in community work;
- recognition by the community as a person of integrity;
- a commitment of time to fully participate in capacity-building, assessments, and monitoring activities; and
- a minimum level of formal education.

Citizens who are accepted are then trained by experienced, registered NGOs who meet the following criteria:

- a minimum of three years working with communities;
- technical expertise including a good knowledge of Colombian law and legal procedures;
- adequate resources, equipment, and transportation to conduct business effectively;
- ability to leverage funding from private entities so that the NGO's involvement with environmental activities will continue even after the cessation of agency support; and
- a track record of advocating civic involvement in development debates.

By April 1998 over 1,000 environmental overseers had been trained. The overseers receive a formal identification card, and the highest environmental authority keeps a record of all active overseers. The overseers are given training courses on laws, resolutions, policies, and findings on a bimonthly basis. The costs of the materials and logistical support they need are shown in table 4. The overseers have the full backing of the National Controller's Office, the Office of Attorney General, and the *Personaria* in the conduct of their duties. All state agencies are required to provide information to the satisfaction of the overseers upon their request. Overseers represent their communities by submitting both oral and written recommendations, complaints, opinions, and comments.

Table 4. Santiago de Cali, Columbia: Annual Costs of Maintaining Overseers (in US$)

Each overseer requires:	
Training, a minimum of 100 hours per year, at about $50 per hour;	$5,000
Textbooks, materials, certificates, and identification;	$ 200
Stamps, bulletins, and newspapers;	$ 50
Total per overseer per year	**$5,250**
Total annual cost of logistical support for an entire municipal network, including office space, computers and software	**$3,000**

Evaluation

The overseers are actively involved in the designing of action plans, and in the implementation of environmental programs. They work closely with DAGMA to ensure environmental compliance by businesses, factories, and municipal agencies. Examples of their involvement include construction of the Cali Metro, monitoring of air quality, and the rehabilitation of Cali's seven rivers. Specifically, overseers have been at the forefront of a fight against lead poisoning produced by Bera factories in the fifth district of Cali. They successfully halted dangerous and careless lead production techniques.

Indonesia: Persuading Industries to Publish Emissions

In Indonesia, a country where formal enforcement of environmental regulations is impeded by a lack of political will, scarce financial resources, and weak institutions, informal enforcement by citizens can be the only means of protecting the environment. Informal enforcement of regulations or monitoring can come about only if citizens are knowledgeable about the environment. This is especially critical if the country is increasing the manufacturing sector of its economy, which can rapidly worsen pollution.

Indonesia has a small budget for environmental regulation and a limited capacity for implementation. The Ministry of Environment decided to try a public

disclosure program that uses a firm's concern about its reputation as an incentive to comply with environmental standards. Evidence from OECD countries and from developing countries has shown that firms do care about their environmental records and reputations.[1]

Objectives

The Program for Pollution Control, Evaluation, and Rating (PROPER) has two main objectives:

- to promote compliance with existing regulations; and
- to reward firms whose performance exceeds regulatory standards (Proper-Prokasih Team 1995).[2]

PROPER is reportedly the first government program to publish a single index of environmental performance. This rating system is deliberately simple, so different sections of society will benefit from it—stockholders, businesses, consumers, communities, and state officials. Under this program polluters are color coded (table 5).

The public disclosure program is expanding to cover air, water, and hazardous-solid pollution. In Colombia and Mexico an implementation team is working with the local media to come up with locally acceptable rating indicators.[3]

Implementation

In Indonesia the first step in implementation was to rate the compliance status of the polluters: 6 plants were rated black; 115, red; 61, blue; 5, green; and 0, gold. Public disclosure of ratings heightens firms' concerns about their environmental reputation. Competition among firms may also motivate good environmental per-

[1] For evidence from North America, see Laplante and Lanoie (1994). For developing countries, see Pargal and Wheeler (1995) and Huq and Wheeler (1992).

[2] Information on the PROPER program in Indonesia can also be found on the NIPR (New Ideas in Pollution Regulation) Knowledge Management Web Page, Washington, D.C., World Bank. This section draws on that source.

[3] From personal communication with Susmita Dasgupta, economist, Development Economics Research Group, World Bank.

Table 5. Indonesia: Pollution Rating System of a Public Disclosure Program

Compliance status	*Rating*	*Performance level*	*Performance criteria*
Not in Compliance	**Black**	Very poor	Polluter makes no effort to control pollution, or causes serious environmental damage.
Not in Compliance	**Red**	Poor	Polluter makes some effort to control pollution, but not enough to achieve compliance.
Not in Compliance	**Blue**	Almost adequate	Polluter only applies effort sufficient to meet the standard.
In Compliance	**Green**	Good	Pollution level is lower than the discharge standards by at least 50 percent. Polluter also ensures proper disposal of sludge; good housekeeping; accurate pollution records; and reasonable maintenance of the waste water treatment system.
In Compliance	**Gold**	Excellent	All requirements of the Green level, plus similar levels of pollution control for air and hazardous waste. Polluter reaches high international standards by making extensive use of clean technology, waste minimization pollution prevention, recycling, etc.

Source: Proper-Prokasih Team (1995).

formers to help regulators identify poor environmental performers. In public disclosure programs, a reputable grading or judging agency is critical because grading is a difficult task involving many variables. In terms of pollution, indicators are difficult to obtain and subject to large measurement errors (Proper-Prokasih Team 1995). Subjectivity also comes into play when judging the real impact of pollutants on the ecosystem or the community.

Evaluation

Public disclosure programs are a valuable alternative to costly legal procedures. For polluters living in areas where there is a great feeling of community, the incentives and pressures to abate pollution would be very high. Here again, functional literacy

programs can help communities come together and act collectively. A pollution-awareness functional literacy program can enable the public to read and understand what these pollution ratings mean.

During Phase One of Indonesia's program, 187 industries were privately notified in June 1995 and given until November of that year to improve their performance, at which point they were rated black, red, blue, green, or gold. Anecdotal evidence suggests that PROPER ratings have elicited strong responses from rated firms, and none of them has so far challenged the ratings. As anticipated, many superior performers volunteered to be rated in Phase Two.

Mexico: The National Information System for Claims and Complaints

The Government of Mexico needed to establish a systematic procedure that was responsive to citizens' claims and complaints about the environment. The DBASE IV system, in place before the implementation of this project, was hindered by duplication and inefficiency. Correspondence was via word processor and was slow, delaying timely corrective action by relevant offices at the federal, state, and municipal levels.

One goal of the National Environmental Program (1995–2000) was to put in place a systematic registry of claims, complaints, and the responsive actions taken by authorities. The National Information System for Claims and Complaints will enable inter-institutional access between central offices and the 31 claims and complaints units in the state delegations of PFPA (Procuraduria Federal de Protección al Ambiente).

Objective

The objectives of the National Information System are as follows:

- to process all claims and complaints in a transparent and efficient way;
- to keep all data current and monitor official responsiveness;
- to evaluate both qualitatively and quantitatively all claims and complaints; and

- to provide clear and precise information on the status of all claims and complaints received by the Central Offices and by the 31 state delegations of PFPA.

Implementation

The National Information System for Claims and Complaints is part of a central network database. This allows all of the entities to work simultaneously. The National Information System will incorporate a security system, ensuring that only authorized personnel can access the files on claims and complaints. It will also create various levels of access, and these will be assigned according to each administrator's responsibilities at the central as well as regional levels.

The system will incorporate, among other things, the latest information on environmental violations. It is hoped that in the final stages the system will be able to provide the Federal Council of Environmental Protection with a description of claims or complaints, the follow-up actions taken, and the final resolutions. The central offices will gather and process data, create statistical reports, as well as monitor and install software.

Information is gathered through a cooperative effort by the government, the claimant, and the industry against whom a complaint has been made. Various statistical reports are also produced, categorized by the location, status, and environmental factors of claims and complaints.

Evaluation

The new system has

- improved the process of assessing claims;
- increased efficiency with the automatic output of each document as it is processed;
- increased public awareness of the environment through systematic and categorized statistical reports;
- increased the efficiency and quality of responses to complaints;
- improved client-service relations because of shortened response time; and
- reduced processing errors.

The Philippines: The Metropolitan Environmental Improvement Program

The Metropolitan Environmental Improvement Program (MEIP), jointly established by the World Bank and UNDP in 1989, seeks to provide workable solutions to Asian cities with manifold environmental problems. First, it helps concerned sectors understand environmental problems and solutions, and then it endeavors to build foundations for community governance over the environment. Solutions and procedures for implementation are locally based and thus sustainable. By 1990 five countries, including the Philippines, had endorsed the program (Metropolitan Environmental Improvement Program 1990).

Manila, the National Capital Region of the Philippines, was selected as an MEIP city. Manila covers 636 square kilometers, about 1 percent of the country's total area. It has 9 million inhabitants, about 12 percent of the national population. Recent economic growth has seen the rise of modern buildings and facilities, yet a full third of the population lives in slums. The Manila metropolis generates about 6,300 tons of solid waste per day, but sanitary landfills in nearby provinces can accommodate only about half of this. Manila has more than 1 million registered motor vehicles and half of the country's large industries; ambient air standards are poor, and emission control is ineffective. Furthermore, only 15 percent of Manila is served by a primary sewer system. Although the government of the Philippines and the city of Manila are well aware of the need for investment to alleviate these problems, the financial constraints are severe. In this context, the MEIP provides an innovative way to redress the environmental problems.

Implementation

To coordinate activities, a national program office was located within the Department of Environment and Natural Resources (DENR). A Steering Committee is composed of representatives from seven national government agencies, two regional government offices, two industries, and two NGOs. The day-to-day administration is handled by the National Program Coordinator chosen by DENR with assistance from the World Bank.

Activities connected to the MEIP initiative include ecological waste management, the sale of compost, clean up of the Paco Estuary, the building of public sanitation facilities, and anti-smoke-belching campaigns (table 6). A few of these activities originated outside of MEIP.

Table 6. The Philippines: Public Awareness Activities of the Metropolitan Environmental Improvement Program

Activity	*Implementation details*
Waste Management (in Bustos)	▪ Low-technology and low-cost methods address the basic causes of excessive waste, poor waste management, and the spread of disease. ▪ The program's house-to-house approach trains each household in waste management. ▪ Waste collection centers for each barangayi generate income. ▪ Recyclable and nonrecyclable materials are separated; materials useful for animal feed and for compost are also divided. ▪ The Ecology Training Center exhibits handicrafts produced from waste material and demonstrates the environmental progress made by communities.
Compost Sales (in Santa Maria)	▪ In Santa Maria 40 percent of waste comes from the public market and surrounding communities; to address this problem, the Assorted Waste Administration and Recycling Enterprises (AWARE) was created by one of its citizens. ▪ The city provides an interest-free loan of 500,000 pesos to AWARE to be paid back within 10 years. ▪ An education and information campaign is waged to inform the public and vendors about proper waste segregation. ▪ In 1990 four tons of organic waste per day were processed, producing 2,400 fifty-kilo sacks of organic fertilizer at P155 per kilo (cost P85 per kilo).

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Clean-up of the Paco Estuary	This estuary is heavily polluted and deaths have been connected to the ingestion of river water. The public market and surrounding communities, rather than industry, are the main source of pollution. ■ Workshops on coordinating solid waste management were held for Paco market vendors, street hawkers, community residents, market administrators, city and barangay officials, and representatives of the Metro Manila Authority and the Department of Environment and Natural Resources. ■ Surveys were conducted on waste generation and disposal, and on the community's perception of the problem. ■ Consultative meetings were held in the market and in the alleys of neighboring squatter communities. ■ Integrated environmental management became part of training for machete vendors; NGOs support extensive ecological information campaign using trained members of the community and market focus groups. ■ Members of the community divided themselves into committees on different topics, such as education, refuse collection, and engineering. ■ A mechanism was established for recycling and collection of waste; 60 percent of hawkers participate and 33 percent of waste is composted. ■ For the first time no flooding was experienced during monsoon.
Public Sanitation Facilities (in congested and depressed areas of Metro Manila)	■ Community user associations manage toilets, baths, standpipes, and laundry areas (built by Metro Manila Commission); they decide on user fees and collection methods. ■ Earnings from these facilities are directed to other community projects such as footpaths, basketball courts, and cooperative stores.
Anti-Smoke-Belching Campaigns	Metro Manila has 42 percent of the country's 2 million vehicles, which contribute to terrible congestion and air pollution. ■ A targeted information campaign is begun; letters are sent to Cabinet ministers and the legislature; resource persons receive media exposure. ■ Smoke belchers are apprehended and fined according to degree of pollution (measured by Hartridge smoke meters); driver education teaches drivers that they are most at risk of chronic respiratory illness. ■ Private corporations support the initiative by refusing to do business with companies with poor emission standards for their vehicles.

Evaluation

The Metropolitan Environmental Improvement Program became a catalyst for a broader, nationwide initiative: community-based waste management is now seen as a relevant issue throughout the Philippines. The selection of a very able and influential National Program Coordinator helped place the program on the government's agenda.

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Trinidad and Tobago: Management of Citizens' Complaints

Flooded with complaints from citizens, the Environmental Management Authority (EMA) in Port of Spain established a complaints office in 1995 with assistance from the World Bank. The complaints range widely, from livestock rearing to industrial emissions and effluents. In most instances the EMA receives complaints as a last resort after people have tried to resolve the issues through other governmental agencies. At present environmental legislation in Trinidad and Tobago has no teeth, and the judicial system is not equipped to resolve conflicts. No lawyers or judges have specific training to deal with environmental issues.

Implementation

The EMA initiates action only on written and signed complaints, unless an emergency threatens the environment or people. The EMA respects confidentiality and withholds the origin of the complaint when requested. It solicits the cooperation of relevant agencies and seeks to enforce current legislation and lobby for new legislation to meet its mandate. The EMA is hampered in this by a toothless legislative and judicial system that is ill equipped to resolve environmental problems.

The office specifically assigned to take complaints has a full-time staff. The manager of pollution prevention and control services handles emergencies and issues that are politically sensitive; the technical assistant keeps the registry of complaints, drafts correspondence, and reports and coordinates investigations. Periodic updates of outstanding complaints are taken up with the managing director.

When the office receives a complaint, it stamps it with the date, assigns it a number, and files it according to subject category (for example, air, emergency response, hazardous waste and spills, water, noise, odors, and environmental degradation).

The database of complaints contains the following information: reference number; date of receipt; name and address of the person reporting the information; nature of alleged offense; location of alleged offense; name and address of the alleged offender; date investigation initiated/letter of acknowledgment; and status of investigation and other relevant comments.

Evaluation

Between August 1995 and March 1998, 249 complaints were received by the EMA and 77 were resolved. The system will work more effectively if:

- the EMA is better equipped to solve problems;
- the legislation has actual power; and
- the judicial system is able to back EMA action.

Development Projects: Lessons and Realities

In this section valuable lessons from the case studies are drawn in these areas: improving community awareness, gathering baseline information, strengthening institutions, innovative financing, disbursements, procurement, local institutions, and monitoring and evaluation.

Improving Community Awareness

The five case studies exemplify successful efforts to protect investments in the environment and increase civil society's role in addressing environmental problems. Furthermore, they have had a catalytic effect and spawned similar programs in other countries. The following lessons can be drawn from these experiences.

- *Communities can be made aware of specific environmental problems and take action to address them.* Outside technical information and empirical information from within the community both play a part in improving the environment. Industries must be seen as an integral part of the community and can be powerful allies of the government. Solutions and implementation plans largely crafted by the communities work the best. However, outside technical assistance is often needed to find technically sound solutions. In the case of Indonesia's Program for Pollution Control, Evaluation, and Rating, the solutions were largely determined by the government. However, the industries understood the issues and believed that they could and should do something about them.
- *Communities can mobilize their own resources and champion the cause of a cleaner and safer environment.* Resources can be in the form of labor, institutional arrangements, or funds. It is important that the community become a "shareholder" with real power and influence. The Metropolitan Environmental Improvement Program in Manila was successful because the community realized that its activities and its own market was the main polluter of the estuary.

- *The private sector can be actively involved.* The government and communities can gain much from the involvement of private sector businesses. Not only do they provide resources and in-kind contributions, but they also support environmental efforts by improving the compliance of their business partners with environmental regulations. In the anti-smoke-pollution campaign in Manila, industries not only complied with emission standards in their own plants, but made sure their partners adhered to the same standards.
- *Transparency and equity are necessary.* In designing plans of action, all stakeholders must be represented as far as possible and given a meaningful role. Transparency in decisionmaking will work toward the common good.
- *Flexibility is necessary.* Flexibility during design and implementation of a program will make it adaptable to changing realities and political climates. It will also ensure that the debate and discussion on environmental issues are kept alive.
- *Institutional capacity building is integral to success.* If community interests are not being voiced by organized groups within the community, outsiders can make a valuable contribution by building institutions that harness community efforts in an organized and rational way. Training in accounting, management, and political activism may be particularly useful.
- *Cultural relevance must always be considered.* Different cultures require different approaches to the same problems. Cultural realities must be factored in at the very beginning of the program. Any other approach can be disastrous and costly to communities.

Table 7 presents the objectives of the fiscal 1997 Latin America environment portfolio. Next to each objective are listed actions that could empower civil society through awareness and functional literacy programs.

Table 7. Fiscal 1997 Latin America Environment Portfolio: Opportunities for Empowering Civil Society

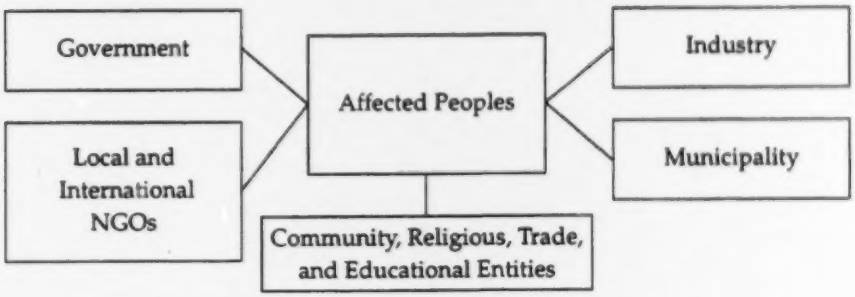
Objectives of the environment portfolio	*Ways to empower civil society*
■ Internalize the full range of social costs and benefits associated with private and public decisions and actions for native forests	■ Describe sustainable agricultural practices and various uses of plant species. ■ Offer educational programs to create a sense of appreciation of how the ecosystem works
■ Conserve forest reserves, the biodiversity of national parks, and endangered ecosystems ■ Improve natural resource management and supervision of forest-product harvesting	■ Begin literacy activities with local communities close to national parks; discuss employment and income-generating opportunities related to preserving forests ■ Give presentations on the environmentally sustainable practices of the indigenous groups, their rich culture, and the importance of safeguarding this national heritage ■ Show community videos to promote environmental literacy ■ Offer community-based activities on natural resource management
■ Promote sustainable ecotourism	■ Train local people to operate as guides for ecotourism
■ Recognize indigenous tribal lands	■ Carefully tailor literacy activities to the tribal peoples
■ Improve urban environment management	■ Teach urban dwellers (especially women) biological and other environmental lessons to reduce morbidity and mortality often caused by polluted water ■ Promote the urban environment as an election issue through media coverage and environmentally friendly civil action groups ■ Reiterate how urban environment management affects the common good ■ Offer training to implement informal enforcement of environmental regulation by citizen groups
■ Improve solid waste management	■ Initiate community programs describing proper disposal techniques and the reasons for them ■ Promote environmentally friendly packaging of solid waste
■ Improve management of pollution	■ Offer literacy programs in reading toxic waste inventories, emissions, ambient quality and air quality indexes (see PROPER example)
■ Promote soil and water conservation and sustainable agriculture	■ Provide literacy programs and train agricultural extension workers on biodiversity, pest management, and soil erosion

Source: Latin America environment portfolio for fiscal 1997.

Gathering Baseline Information

Baseline information on community needs, values, attitudes, and knowledge about the environment can be gathered by the stakeholders depicted in figure 1. This information is useful in designing functional literacy programs and compiling qualitative performance indicators. It is essential to incorporate in questionnaires the concerns of the community; input from nongovernmental organizations can ensure that the questionnaires are relevant and that they ferret out useful and vital information.

Figure 1. Stakeholders Involved in Collecting Baseline Data



An institutional assessment is recommended to harness baseline information. Such an assessment is aided by functional literacy programs.

Strengthening Institutional Arrangements

Efforts should be made to strengthen institutions at the national, regional, and local levels. Institutional capacity building was instrumental in the success of Indonesia's Program for Pollution Control, Evaluation, and Rating. Self-governing institutions at the community level and a private/public mix in governing institutions are particularly important.

Village committees can play a vital role in identifying issues for learning and discussion, organizing assemblies, encouraging participation, monitoring resource allocations, and prioritizing actions. Leaders identified by the community can be joined on the committees by outside experts, thus bringing together technical and empirical knowledge.

Institutional arrangements must be made to deal appropriately with the various stakeholders: the direct and indirect beneficiaries of a project as well as those who are opposed to the project because of their vested interests. This will help keep the project from drifting away from expressed local preferences and demands.

The choice of appropriate local community institutions is of prime importance. Preferably, the institutions should have a track record of at least three years in the kind of program, project, or intervention being contemplated.[4] The institutions also should have a sound knowledge of the beneficiaries, their culture, and economic and social life. Again, the community members should have considerable input in the selection of the institutions. Bank officials may not be able to spend much time in the field, so the local institutions become very valuable partners for both the Bank and the community.

The most important qualities of local institutions are:

- a deep commitment to the beneficiary community built on respect;
- the trust of the local community;
- sound experience related to functional literacy;
- willingness to let the community make decisions;
- management and institutional capacity.

After the selection of the community institutions, preparation and supervision become a team effort involving the communities, local institutions, and the Bank.

Innovative Financing

An innovative approach to financing social and environmental projects is found in Colombia. The Fundacion para la Educacion Superior (FES) has created permanent funds with counterpart financing. Every dollar contributed by the private sector is matched by half a dollar from FES. The money is invested in various profit-making ventures. Seventy percent of the returns is given to the investors;

[4] In an extreme case in recent years, the NGO that contracted to do the rehabilitation for involuntary resettlement was sued by the community for breach of contract. The NGO selected must have a track record of good relations with the community.

30 percent is retained by FES for its permanent fund. Therefore, in addition to any donor financing, FES is able to generate its own resources for financing ongoing social and environmental activities by communities and NGOs.

Demand-side financing mechanisms—from rural "Thrift and Credit Cooperative Societies" to "Venture Capital"—can be considered for equity investments in small businesses with a high social impact. Another innovative approach, called Self-Managed Funds, is found in Chile. Communities present their plans for development-project competitions. Simple application forms are used and training courses are held. A cap is placed on the total funds available to the community but not on the operating options or the theme of development. Indigenous communities have also played an active role when a participatory panel of judges has had final say (Bengoa 1993).

Central and local government budget allocations and accountability are areas of vital importance. Re-allocations and efficient mechanisms for accountability will have to be seriously considered to encourage spending toward sustainable economic growth that is also environmentally sound. Innovative check and balance systems that are appropriate to the local culture must be developed to circumvent corruption.

Disbursements

Accounts may be set up in a local bank in conjunction with local NGOs for local disbursements. This will allow the Bank and the Government to receive disbursement summaries as required from the local bank or NGO. However, it is considered imperative that the local leaders or the "village committee" be actively involved in the expression of demand, the timing, and the details of spending.

Procurement

The use of large contractors, prevalent in Bank projects, can be detrimental in a community-oriented and demand-driven functional literacy project. Communities, even in the same region, may not be at the same stage of project development,

and large contractors may implement bulk procurement of articles, which is too modern and complicated for many communities (Watson and Jaganathan 1995). This is in direct conflict with the recommended demand-driven approach. Procurement and procedures must fit the institutional capacity.

A procurement scheme that is able to respond to small and differing demands for goods and services is strongly recommended. Accounting procedures will have to be simplified, and requirements made appropriately flexible, while ensuring sound business practices. When using small local contractors, payment on delivery is highly desirable, if not a necessity. Transaction costs can be higher with this flexible procurement scheme, but the benefits derived from institutional capacity strengthening and the empowerment of peoples will far outweigh these higher costs. The increased time needed to manage such a process is also negligible when compared with the benefits, and it does not result in an overwhelming workload: the task manager of PROSANEAR, a water and sewerage project in Brazil, was able to manage 60 subprojects with a week's lag time (Watson and Jaganathan 1995).

Monitoring and Evaluation

The best forms of monitoring and evaluation are those that demand self-regulation and afford opportunities for learning and solving problems in a collective manner. The role of the task manager is not, by any means, one of observation. Rather, the task manager should try to be part of the on-going monitoring and evaluation process through regular visits to the community. This must be accomplished with a spirit of partnership and cooperation, so that it does not appear that the task manager is checking on the community, but rather participating with it on the project.

Functional literacy can qualitatively improve development instruments. The two-way information flow will bring about new data and knowledge hitherto unknown to the client countries or the development agencies. Literate beneficiaries will also make their preferences known and move their governments and the Bank to meet their expressed demand. Locally defined demand-based approaches are preferable to centrally defined needs-based approaches. Monitoring and evaluation can then be tied to consumers' or clients' satisfaction.

Conclusion

The environment as a field has seen accomplishments and daunting challenges in the final years of the twentieth century. New understanding of the environment has enabled multilateral agencies, governments, and civil society to take steps toward stabilizing the environment and conserving natural resources. Yet providing an equitable standard of living for all without causing irreparable damage to life support systems remains an enormous challenge.

The case studies described in this paper represent important progress in the right direction. They demonstrate the indisputable value of environmental education for primary and secondary students, environmental awareness programs for citizens, and functional literacy programs for targeted groups. When people in developing countries receive and understand information about their environment, they can effectively work toward reducing environmental degradation (World Bank 1998b).

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